

REMARKS

The Examiner has rejected claims 1 through 8, 13, 15 and 23 as being obvious over the prior art. The Applicant respectfully disagrees as the technical principle of the present invention is different from that of the cited references

The cited references are based on the existing Internet protocol principle IPv4 or IPv6 (hereinafter referred to as “Mobile Internet Protocol (MIP) principle”). The cited reference *Mobility Support in IPv6* partially exhibits the MIP principle in IPv6. In addition, the cited reference *3GPP TS 29.060* employs the tunneling protocol that is a part of the MIP principle. However, the present invention exhibits mobile communication and Internet technology based on the newly devised “Cyber Internet Switching Principle (CIS principle; named by the inventor of the present invention)” representing transmission efficiency much higher than the existing MIP protocol IPv4 or IPv6. For example, the present invention does not make use of the concept of the home agent or foreign agent that is used in the mobile IPv4. In addition, the present invention does not make use of the IPv6 concept of a binding principle.

Hereinafter, the principle of the mobile communication Internet protocol (IP) network used in the present invention will be described for reference. The principle of the existing domestic/foreign mobile communication IP network disclosed in the cited reference and other documents is different from the principle of the mobile communication IP network used in the present invention. The cited references and existing domestic/foreign technologies are based on the “MIP principle” that is utilized in the IPv4 system or the IPv6 system. This can be found in many documents as well as the cited reference (*Mobility Support in IPv6*), which are available from the Internet or mobile communication research institutions, so it will not be further described below in detail.

In contrast, the present invention is based on the “CIS principle” which is newly devised by the inventor of the present invention. To explain the

difference between the existing “MIP principle” and the “CIS principle” of the present invention, an example of sending a letter to a friend on a journey will be applied:

(a) Existing “MIP principle”: According to the existing MIP principle, the letter is not directly forwarded to the address of the friend on a journey, but forwarded to the home of the friend and then delivered to the friend on a journey. Thus, a complicated and troublesome delivery procedure is required to deliver the letter to the friend. That is, according to the existing MIP principle, since the address of the friend on a journey is unknown, it is impossible to directly post the letter to the friend. Thus, the letter is primarily forwarded to the home of the friend and then secondarily delivered to the friend on a journey by the family of the friend. At this time, the family must reseal the letter using a new letter envelope to post the letter to the friend on a journey. The friend receiving the letter can confirm the address of the letter by unsealing the letter envelope. For this reason, the cited references and conventional technologies must adopt the concept of Home Agent, Foreign Agent, and Binding, and data encapsulation/decapsulation and tunneling processes are necessary during the data transmission. In addition, data conversion between IPv4 and IPv6 and equipment development are necessary, so the system cost is increased and the service speed is lowered.

(b) “CIS principle” of the present invention: According to the CIS principle of the present invention, the letter can be directly forwarded to the friend on a journey, so the delivery procedure of the letter can be easy and simplified. For this reason, the CIS principle of the present invention is not needed to adopt the concept of Home Agent, Foreign Agent, and Binding, and data encapsulation/decapsulation and tunneling processes are not necessary during the data transmission. In addition, data conversion between IPv4 and IPv6 and equipment development are not necessary, so the system cost is reduced by 30 to 50% and the service speed is increased by 20 to 30%.

The Houh Invention

According to the Houh invention, telephones are connected to end points in place of personal computers by using the DHCP (dynamic host configuration protocol) technology, which is the existing Internet technology for dynamic IP address assignment. Thus, the NCP disclosed in the Houh invention serves as a controller, such as a controller of the existing Internet DHCP. In addition, since the telephones are connected to the end points in place of the personal computers, the function of controlling the telephones is added in the Houh invention.

That is, according to the DHCP technology, which is the existing Internet technology for dynamic IP address assignment, personal computers are connected to end points and the IP address is exclusively assigned to the personal computers in use. According to the Houh invention, telephones are connected to the end points and the IP address is exclusively assigned to the telephones in use. The technical feature of the Houh invention relative to existing technology is that a dynamic IP address is assigned to the telephones connected to the end points instead of the personal computers.

The Toth Invention

According to the Toth invention, instead of connecting personal computers to the end points through a cable based on the existing DHCP technology, plural notebook computers are wirelessly connected to end points, which are wireless base stations connected to each other through a cable, such that the user can use the notebook computer while moving.

Thus, the IAS and SPSN disclosed in the Toth invention serve as a controller, such as a controller of the existing Internet DHCP. In addition, since the notebook computers wirelessly connected to the wireless base stations serving as the end points such that the user can use the notebook computer while moving, the function of wirelessly controlling the notebook computers is added to the DHCP technology in the Toth invention. That is, the Toth

invention is advanced from the Houh invention in that the notebook computers are wirelessly connected to the wireless base stations and the temporary IP address is assigned to the notebook computers such that the user can use the notebook computer while moving. In other words, the Toth invention is different from the existing technology in that the wireless base stations are installed as end points, the notebook computers are wirelessly connected to the wireless base stations, and the temporary IP address is assigned to the notebook computers.

The Virtanen Invention

The Virtanen invention relates to a method and a system for limiting the quality of service (QoS) in the circuit switching network. The Virtanen invention discloses a part of the 2nd-generation mobile communication technology, which is completely different from the next-generation mobile communication system of the present invention employing the IP packet switching network. The present invention does not use the concept of the QoS.

The Chu Invention

The Chu invention discloses the technology for providing the VoIP service to wireless terminals by combining the VoIP gateway with the software radio port (SRP) serving as the wireless modem base station.

The Karino Invention

According to the Karino invention, the DHCP technology, which is the existing Internet technology for dynamic IP address assignment, is applied to the MIP network. In addition, wireless base stations are connected to end points and cellular phones are wirelessly connected to the wireless base stations such that the user can use the cellular phone while moving. As disclosed in Page 1, line [0014] of the Karino invention, "the server 18, for instance, a dynamic host configuration protocol (DHCP) to manage parameters,

in a lump, necessary for connection with the network 17", the Karino invention uses the existing DHCP technology. The Karino invention is different from the Toth invention only in that the temporary IP address is assigned in the IP address to which the telephone number is assigned.

The References: *Mobility Support in IPv6 and 3GPP TS 29.060*

These documents disclose a part of the MIP principle and the principle of the circuit switching network, which is completely different from the CIS principle of the present invention.

The Present Invention

The cited references (Toth (Patent No. US 5,708,655), Houh (Patent No. W000/24166), Virtanen (Publication No. US 2002/0128017 A1), Chu (Publication No. US 2007/0286165 A1), Karino patent (Publication No. US 2003/0072315 A1), and the documents *Mobility Support in IPv6 and 3GPP TS 29.060*) are based on the MIP principle which is the existing Internet technology. Thus, the cited references require the concept of Home agent, Foreign agent and binding. In addition, data encapsulation/decapsulation and tunneling processes are necessary during the data transmission. Further, data conversion between IPv4 and IPv6 and equipment development are necessary, so the system cost is increased and the service speed is lowered.

However, the present invention is based on the advanced CIS principle, which is completely different from the MIP principle, so the present invention does not require the concept of Home agent, Foreign agent and binding, and data encapsulation/decapsulation and tunneling processes during the data transmission.

The cited references disclose the existing communication technology, such as the second or third generation mobile communication technology having a low data rate (from tens of kpbs to several hundreds of kpbs, or several Mbps), whereas the present invention is the next generation mobile

communication, that is, the fourth generation mobile communication and discloses the technology capable of processing the data at a very high data rate (from 100 Mbps to 1 Gbps).

Distinguishing Prior Art from the Present Invention

The Houh invention and the Karino invention disclose the low-speed technology capable of enabling voice communication using the DHCP principle based on the MIP principle. In contrast, the present invention discloses the technology capable of transmitting data, such as image data and file data as well as voice communication data, at a very high data rate.

The Houh invention and the Karino invention employ the existing VoIP technology based on the MIP principle and use the existing IP, such as H323, SIP, and mobile IPv4 or IPv6, during the voice communication. In contrast, the present invention does not use the existing IP, but transmits image data, voice data and other data based on the CIS principle. Thus, the present invention has a transmission efficiency which is much higher than that of the existing IP, such as the mobile IPv4 or IPv6.

The Toth invention requires the concept of home agent or foreign agent when using the mobile IPv4 based on the existing MIP principle to make data communication between the mobile stations (MS) through dynamically-assigned addressing. However, since the present invention is based on the advanced CIS principle, the data communication can be easily realized between the mobile stations without using the concept of home agent or foreign agent. Of course, the present invention does not adopt the binding principle of the IPv6.

Referring to FIG. 1 of the Toth invention, the MS performs the data communication using the permanent IP address and the temporary IP address. This represents that the Toth invention is based on the existing MIP principle, which essentially requires tunneling, data encapsulation, or data decapsulation. In contrast, since the present invention is based on the

advanced CIS principle, the MS has no permanent IP address, and the base station has the permanent IP address, so the data communication can be achieved without tunneling, data encapsulation, or data decapsulation. For this reason, the present invention is suitable for the next-generation mobile communication system capable of performing the high speed data communication. The communication control principle of the present invention is completely different from that of the cited references.

The Examiner indicates that claims 1, 5, 6 and 23 are rejected as being unpatentable over Toth in view of Houh and Vitanen. As described above, the Virtanen invention relates to the QoS technology in the circuit switching network which is completely different from the IP packet switching network technology of the present invention. In addition, the Houh invention and the Toth invention are based on the MIP principle, which is the existing Internet principle. The MIP principle includes a mobile communication terminal (wireless hosts A 50 and B 32 shown in FIG. 1 of the Toth invention), a home agent (HA, communication system 10 shown in FIG. 1 of the Toth invention), and a foreign agent (FA, communication system 14 shown in FIG. 1 of the Toth invention). When the MS is moved from the HA to the FA, the permanent IP address and the temporary IP address (called CoA in the MIP principle) of the MS are necessary to make data communication. The tunneling is necessary during the data communication, which is described in column 8, line 1 to 11 of the Toth invention. That is, the Toth invention has the technical feature in that the existing DHCP technology is combined with the existing MIP principle to provide the temporary IP address to the MS in the HA and the FA. Therefore, controllers of the wireless Internet base station and the exchange station and control principle thereof according to the present invention are different from controllers of the wireless Internet base station and the exchange station and control principle thereof according to the Toth invention. For instance, the wireless Internet base station of the present invention corresponds to the BS 22 of the HA (reference numeral 10 of FIG. 1) of the Toth invention. The base

station of the present invention has the IP address, but the base station of the Toth invention has no IP address. The base station of the Toth invention has no control unit including a storage unit for storing a rent IP, an address allocation unit, and a call controller, but the base station of the present invention requires the control unit because the present invention is based on the CIS principle. The MS of the Toth invention includes a PCMCIA radio modem card equipped in the notebook computer or the mobile telephone. When the MS uses the radio modem card, the base station of the Toth invention adopts the CSMA-CA (carrier sense multiple access collision avoidance) scheme or the RTS/CTS (request to send/clear to send) scheme, in which the base station does not simultaneously communicate with a plurality of MSs belonging to the base station, but send data to the MS when other MSs do not transmit the data. That is, the Toth invention does not adopt the concept of the channel allocation, so the channel allocation unit is not provided, and the MSs cannot simultaneously transmit the data. However, according to the present invention, the MS has its own channel, so the plural MSs can simultaneously transmit the data. In the Toth invention, if the mobile telephone is attached to the MS to make communication with the base station, the second generation mobile communication technology, such as the PPP link or the slow data control channel (SDCCH), is used to allocate the voice communication channel, so the data communication may be performed at a very low speed (see, column 8, lines 23 to 46).

In contrast, according to the present invention, the wireless Internet base station does not allocate the voice channel, but lends the IP addresses to the mobile communication terminals based on the phone numbers and electronic serial numbers (ESNs) of the mobile communication terminals, thereby performing the routing of the mobile communication terminals. As a result, the handoff for the mobile communication terminals can be achieved during the voice communication as well as the data communication of the image data or the other data using the IP.

Therefore, the present invention is the fourth generation mobile communication technology capable of freely switching the voice communication data as well as the image data and the other data between the mobile communication terminals at a very high data rate during the communication, which is different from the cited references.

For reference, the IP technology of the present invention applied to a next generation mobile phone (fourth generation mobile phone) and the existing domestic and foreign IP technologies (e.g. IPv6) are compared with each other in terms of performance and effects in Table 1. As can be seen from Table 1, the technology of the present invention is completely different from the cited references and the existing IP technology (mobile IPv4 and IPv6). The performance and effects of the present invention were proven to be better than those of the existing domestic and foreign IP technologies at that time it was developed, and thus, the present invention can be regarded as a new and advanced technology.

Table 1: Performance and effects of the present invention applied to the next generation mobile phone and other technologies.

Item	Domestic and Foreign Technologies	Present Invention	Remark
Service Speed	100 Mbps when moved, 1 Gbps when stopped	Improved by about 20% to about 30%	Estimated when the inventive technology is applied inclusive of the domestic and foreign local technologies in the light of characteristics
Price and Expense (for improving compatibility with base station and Internet)	100% as reference	70% to 50% (inexpensive by 30% to 50%)	Comparison under the same speed and performance
Convenience of ubiquitous service user	Inconvenient (Use of IP address or domain name)	Very convenient (Same use as phone number, and usability of domain name)	Free access to object using figures having format of phone number as universal common language
User convenience when accessed to Internet	Inconvenient (Use of IP address or domain name)	Very convenient (Same use as phone number, usability of domain name)	Equal to use of current phone number
Compatibility with existing IP address system (IPv4)	Very inconvenient (Establish new IP address system, IPv6, and inevitable use IPv6 with IPv4)	Very convenient (Able to use only IPv4)	Existing domestic and foreign technologies increase enormous expenses due to establishment of new IP address system
Use efficiency of IP address	Inefficient (Always obtain IP address, and require new IP address system)	Very efficient (Use IP address only when user uses Internet)	In the inventive technology that does not require IPv6 as new IP address system, only IPv4, existing IP address system is enough (including Ubiquitous)

Notes:

- 1) The service speed of the existing Internet transfer technology for the cited references is reduced due to increase of a load for encapsulation and release of data, conversion between IPv6 and IPv4 addresses, and so on.
- 2) The internet address allocation scheme between the existing Internet technology and the present invention can be described as train seat allocation to aid in understanding. According to the existing internet technology, the seats of a train are allocated to each person or each object such that only the designated person or the designated object can take the seat. According to the present invention, a seat is only allocated to a person who requires the seat, which is similar to the current trend of seat allocation.

The Examiner indicates that GPSN (26 and 24) shown in FIG. 1 of the Toth invention is similar to the wireless Internet exchange station of the present invention. However, the GPSN is a router for routing IP packet data based on the MIP principle. The GPSN includes a controller for performing the routing function of a first communication unit, but does not disclose the storage unit for storing rent IP address and rent information, the address management unit for managing the rent address and the IP address of the base station, and a call connection unit of the present invention. That is, the GPSN is based on the MIP principle, so the GPSN is completely different from the wireless Internet exchange station based on the CIS principle of the present invention. Thus, the wireless Internet exchange station is not anticipated by the GPSN of the Toth invention in view of NCP of the Houh invention.

The Examiner indicates that claims 2 through 4 and 8 are unpatentable over the Toth invention, Houh invention, Vitanen invention, and the 3GPP TS 29.060 in view of the Chu invention. The Examiner indicates that the Toth invention fails to disclose a handoff technology. However, since the radio modem is used in the notebook in the Toth invention, the CSMA-CA scheme or the RTS/CTS scheme must be adopted to the Toth invention for handoff. This handoff technology is based on the MIP principle that is completely different from the handoff technology based on the CIS principle.

Even if the mobile telephone is added to the MS of the Toth invention for the handoff communication, great load is applied to the MS of the Toth invention, so the processing speed of the MS may be degraded. Thus, the MS of the Toth invention cannot deal with the image data (especially, moving pictures), even if it can deal with the voice data. In contrast, the base station and the mobile communication terminal of the present invention can process the voice data and the image data at a high speed. According to the present invention, mass-storage image data and voice data can be processed at high speed through the handoff technology.

The Toth invention, Houh invention, and Karino invention disclose the voice communication or the data communication based on the existing MIP principle. Thus, the existing VoIP technology is required for the voice communication. In addition, the existing IP technology, such as H323, SIP, or mobile IPv4, must be used. In contrast, the present invention is not needed to use the above existing IP technology. The present invention provides an advanced mobile communication technology based on the CIS principle capable of making communication using image data, voice data and the like. The documents *3GPP TS 29.060* and *Mobility Support in IPv6* are for explaining the existing MIP principle, so they are different from the next-generation mobile communication technology based on the CIS principle.

Regarding identification information disclosed in claims: According to the present invention, the database of the wireless Internet base station and the wireless Internet exchange station is formed by combining the IP address of the base station and the rent IP address of the MS based on the telephone number of the MS. If the MS does not make data communication, the database is formed by combining the telephone number and the IP address of the base station for the MS. If the MS makes data communication, the database is formed by combining the telephone number, the IP address of the base station for the MS, and the rent IP address of the MS. The telephone number of the MS is fixed, but the IP address of the base station for the MS and the rent IP address of the MS may vary according to the movement of the MS. The above information is stored in the storage unit, and the wireless Internet base station and the wireless Internet exchange station update information stored in the storage unit based on the state of the MS. Such a function is essentially required to perform the data communication based on the CIS principle. However, the Toth invention, Houh invention, Karino invention, and Chu invention fail to disclose the above function. Thus, the database formed by using the identification information of the MS and the role of the identification

information in the data communication based on the CIS principle are completely different from those of the cited references.

As the cited references are based on the existing MIP principle, which is completely different from the CIS principle of the present invention, the present invention is not anticipated by or obvious over the cited references. (The novelty and inventive steps of the CIS principle of the present invention have been confirmed in various countries, such as China and Korea.)

Claims 1-8, 13-15, and 23 are pending in the application upon entry of the above amendments, and are all believed to be allowable. Support for the claims and amendments exist in the specification as filed and in the specification and claims of the PCT application to which this application claims priority under 35 USC § 371. No new matter has been added. Favorable consideration of the pending claims is respectfully requested.

Should the Examiner believe that a telephone interview would be helpful to expedite favorable prosecution, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

In the event any fees are due in connection with the filing of this document, the Commissioner is hereby authorized to charge said fees to our Deposit Account No. 18-0988.

The application is now believed to be in a condition of allowance. Early action to that effect is eagerly solicited.

Respectfully submitted,

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